COURSE SYLLABUS
ZOO 4370 Mammalogy
Fall 2023

Instructor:
Jacob R. Goheen (Jake) Personal website: goheenresearchgroup.com
Office: Berry Center 149 Office Hours: TTh 830-900am or by appointment
E-mail: jgoheen@uwyo.edu

Teaching Assistants:
Lane Jeakle Personal website: http://goheenresearchgroup.com/index.php/research-group.html
Office: Berry Center 314 Office Hours: by appointment
E-mail: ljeakle@uwyo.edu

Douglas Kamaru Personal website: http://goheenresearchgroup.com/index.php/research-group.html
Office: Berry Center 314 Office Hours: by appointment
E-mail: dnjeri@uwyo.edu

Lab Assistants:

Kat Garrett (Monday), Bri Agenbroad (Wednesday)

Course Information:
- Lecture MW 110-200pm. Biological Sciences 309.
- Lab M or W 230-520pm. Berry Center 217.

Prerequisites: LIFE 2022 (Animal Biology) or consent of instructor

Course Description: This course provides an overview of the biology of Class Mammalia, the mammals. Lecture and lab are independent of each other. In lecture, we will cover biological concepts using all ~25 orders of mammals in the world; in lab, we will focus primarily on identification, distribution, and natural history of the terrestrial mammals of Wyoming.

Disability Statement:
"If you have a physical, learning, sensory or psychological disability and require accommodations, please let me know as soon as possible. You will need to register with, and provide documentation of your disability to University Disability Support Services (UDSS) in SEO, room 330 Knight Hall."

Lecture Objectives:
1) Gain knowledge and further appreciation for the biology and diversity of mammals worldwide.
2) Use case studies of mammals to comprehend classic and contemporary issues in animal behavior, biogeography, conservation, ecology, and evolution.
3) Hone critical thinking skills through analysis of material presented in class and primary literature.
4) Acquire ability to interpret scientific graphs and datasets.

Laboratory Objectives:
1) Gain an in-depth understanding of the natural history of Wyoming's mammals.
2) Learn to locate and extract important information from scientific literature.
3) Gain an understanding of mammalogy as a discipline/profession.
4) Learn to identify a subset of Wyoming's mammals from photographs.

Text(s) and Readings: primary literature and Buskirk's Wild Mammals of Wyoming and Yellowstone NP (by Monday 18 Sep)

Grading: A = 90.00-100%; B = 80.00-89.99%; C = 70.00-79.99%; D = 60.00-69.99%; F ≤ 59.99%
lecture: 11 timed (20 minute) lecture quizzes (20 points each; lowest quiz dropped = 200 points), 1 cumulative final (55 pts). 60% of your course grade.
lab: 1 reflection + 9 readings (3 points each = 30 points), 9 lab quizzes (10 points each; lowest lab quiz dropped = 80 pts), 1 cumulative lab practical (60 pts). 40% of your course grade.

Notes about lecture quizzes:

- Eleven quizzes will be assigned and posted to WyoCourses by 5pm of the date they are assigned. The first quiz will be posted by 5pm Wednesday 30 August.
- We will have four lectures dedicated for quiz-taking. You may take quizzes whenever you want—during the lectures dedicated to quiz taking, or any time after they appear on WyoCourses. However, all quizzes prior to each dedicated quiz taking lecture (20 Sept, 23 Oct, 13 Nov, and 4 Dec) are due by 5pm on that date. For example, Quiz 1 must be completed by 5pm Wednesday 20 Sept.
- Once you open a quiz, you will have 20 minutes to complete it. Ensure that you open a quiz only if you have an uninterrupted 20 minutes; there is no way to 'pause' the timer.
- You are free to use any materials you want during quizzes—notes, lecture videos, internet, etc. In the event that there is a discrepancy between the material covered in class and material on the internet, we will treat as correct the material as it was presented in class.
- 20 minutes per quiz requires that you devote significant effort to studying the material beforehand, rather than try to go through materials for the first time during the quizzes themselves. Students who attempt that strategy tend to (1) believe that 20 minutes is "not enough time" to take a quiz; and (2) not to do well on quizzes.
- Quizzes are to be taken by yourself, and are not to be discussed with your classmates. Honor system. If a classmate approaches you to collaborate on quizzes, please notify Jake for an exciting prize.

Notes about grade calculations: I will show you your grade once during the semester, sometime between weeks 7 and 9. If you need to know your grade at any other time, I will be counting on you to calculate it yourself. Please understand that I will be unable to calculate grades at any other times than these, although you are free to email me what you think your grade is for me to confirm.

Notes about extra credit: please keep track of your own extra credit and dropped quiz for lecture, and please keep track of your own dropped quiz for lab. If this is confusing or unclear, Jake recommends that you calculate your grade without extra credit or the dropped quiz to be safe.

Attendance/participation policy: University sponsored absences are cleared through the Office of Student Life.

If you anticipate missing any of the weekly assignments in lab (due to medical procedures, professional commitments, etc), it is your responsibility to make arrangements with your lab TAs at least 1 week in advance. We will work with students to overcome unforeseen emergencies (e.g., deaths in family, major injury/illness, etc) as necessary. Failure to complete assignments by their deadlines without advanced notice will result in a 0 on those assignments. Requests to switch lab (Monday to Wednesday, or vice versa) need to be made at least one week in advance.

Academic honesty:
University regulation 2-114 ("Procedures and Authorized University Actions in Cases of Academic Dishonesty"). The University of Wyoming is built upon a strong foundation of integrity, respect and trust. All members of the university community have a responsibility to be honest and the right to expect honesty from others. Any form of academic dishonesty is unacceptable to our community and will not be tolerated [from the UW General Bulletin]. Teachers and students should report suspected violations of standards of academic honesty to the instructor, department head, or dean. Other University regulations can be found at: http://www.uwyo.edu/generalcounsel/info.asp?p=3051)

Course Outline of Lecture Video and Discussion Material (subject to change):

Week (Day and Date):	Topic	Pre-Reading	Quiz and Material
1 (M 28 Aug)	Introductions and whatnot	NA	NA
1 (W 30 Aug)	What is a mammal?	Burgin et al 2018.	Q1, 30 Aug
2 (W 6 Sep)	Diversity and systematics 1: Monotremata through Dasyuromorphia	Holt et al 2013.	NA
3 (M 11 Sep)	Diversity and systematics 2: Notoryctemorphia through Cetacea	Wong 2002.	Q2, 6 & 11 Sep

3 (W 13 Sep)	Diversity and systematics 3: Chiroptera through Primates	Sykes et al 2014.	NA
4 (M 18 Sep):	Diversity and systematics 4; ecology, evolution, and behavior of the third chimpanzee	Snyder-Mackler et al 2020	Q3, 13 & 18 Sep
4 (W 20 Sep):	No lecture; quiz taking Q1-Q3 due by 5pm	NA	NA
5 (M 25 Sep):	Global threats to mammals	Bowyer et al 2019.	NA
5 (W 27 Sep):	Phys. ecology: metabolism and diet	Alston et al 2023.	Q4, 25 & 27 Sep
6 (M 2 Oct):	Animal behavior: foraging	Tinker et al 2008.	NA
6 (W 4 Oct):	Animal behavior: foraging wrap-up	Jesmer et al 2020.	Q5, 2 & 4 Oct
7 (M 9 Oct):	Animal behavior: sexual selection	Emlen and Oring 1977.	NA
7 (W 11 Oct):	Population ecology: migration	Abraham et al 2022.	Q6, 9 & 11 Oct
8 (M 16 Oct):	Population ecology: density-dependence	Dantzer et al 2013.	NA
8 (W 18 Oct):	Community ecology: predation	Ford et al 2014.	Q7, 16 & 18 Oct
9 (M 23 Oct):	No lecture; quiz taking Q4-Q7 due by 5pm	NA	NA
9 (W 25 Oct):	Guest lecture (Annabella Helman)	NA	NA
10 (M 30 Oct):	Community ecology: competition	Tomiya and Miller 2021.	Q8, 25 & 30 Oct
10 (W 1 Nov):	Guest lecture (Douglas Kamaru)	Cantor et al 2023.	NA
11 (M 6 Nov):	Mutualism wrap-up and evolutionary spandrels	Pauli et al 2014.	NA
11 (W 8 Nov):	Macroecology	Channell and Lomolino 2001.	Q9, 6 & 8 Nov
12 (M 13 Nov):	Paleobiology	Smith et al 2010.	
12 (W 15 Nov):	Brain size and personalities	Benson-Amram et al 2016.	Q10, 13 & 15 Nov
13 (M Nov 20):	No lecture; quiz taking Q8-Q10 due by 5pm	NA	NA
14 (M Nov 27):	Domestication	Taylor et al 2023.	NA
14 (W Nov 29):	Human societies	NA	Q11, 27 & 29 Nov
15 (M Dec 4):	No lecture; quiz taking Q11 due by 5pm	NA	NA
15 (W Dec 6):	Guest lecture TBA	NA	NA

Cumulative lecture final is 115pm Monday 11 December, room TBA.

Lab Schedule (subject to change):

Lab (Date):	Topic	Pre-Reading	Weekly Assignment (unless noted, all assignments are due by 1pm the day of lab)
Lab 1 (4 and 6 Sep):	Mammalogy as a discipline (on your own through WyoCourses)	NA	reflection due 8 Sep
Lab 2 (11 and 13 Sep):	the mammalian skull, photos	Lazaro et al. 2018.	reading, photo
Lab 3 (18 and 20 Sep):	Order Rodentia (Murinae)	Pasch et al 2017.	Q1, reading
Lab 4 (25 and 27 Sep):	Order Rodentia (Arvicolinae)	Ahlers and Heske 2017.	Q2, reading
Lab 5 (2 and 4 Oct):	Order Rodentia (Sciuridae)	Jagiello et al. 2019.	Q3, reading
Lab 6 (9 and 11 Oct):	Orders Rodentia (other families) and Lagomorpha	Dearing 1997.	Q4, reading
Lab 7 (16 and 18 Oct):	Orders Didelphimorphia, Soricomorpha, and Chiroptera	Morningstar and Sandilands 2019.	Q5, reading
Lab 8 (23 and 25 Oct):	Order Carnivora (Canidae, Felidae, Ursidae)	Middleton et al 2013.	Q6, reading
Lab 9 (30 Oct and 1 Nov):	Order Carnivora (Mephitidae, Mustelidae, Procyonidae)	McKelvey et al 2011.	Q7, reading
Lab 10 (6 and 8 Nov):	Orders Cetartiodactyla and Perissodactyla	Kihwele et al 2020.	Q8, reading
Lab 11 (13 and 15 Nov):	Ask me anything	NA	Q9
----------Happy Thanksgiving! No lab 20 or 22 Nov----------			
Lab 12 (27 and 29 Nov):	Open lab/review for practical	NA	NA
Lab 13 (4 and 6 Dec):	Lab practical	NA	NA

<u>Important Note 1</u>

Email Policy: The best way to communicate with Jake is through email, not WyoCourses. Email or WyoCourses work equally well for Lane and Douglas. Communication is important, and email is a form of communication. Please treat email correspondence as though it's important by initiating email with a greeting and signing off with your name. Questions about lecture should be directed to Jake. Questions about lab should be directed to Lane and/or Douglas. We will try our best to respond to email queries within 48 hours, provided questions are clear and concise, and provided it's not the weekend. If your question will take more than 1-2 minutes to answer, it's best to come to our office hours or schedule an appointment outside of office hours; we'd be happy to answer your question then. If questions are written with improper spelling, grammar, or syntax, we reserve the right to ignore them.

<u>Important Note 2</u>

Participation: In each lecture, several questions will be posed to the class. Sometimes, I'll be looking for spontaneous answers; other times, I'll ask you to break into groups for a few minutes. These questions will extend some aspect of the lecture material in attempt to spur communication and critical thinking, while helping you to become more comfortable with impromptu delivery of scientific material. I am looking for evidence of engagement, problem-solving, and critical thought; I am less concerned that your answer is "correct".

Important Note 3
If you print materials, please make double-sided copies and please recycle them at the end of the semester.

Important Note 4
Why we cannot make powerpoint pdf's available before class:
--we want some of the material to be a surprise.
--we want us (as a class) to set our own pace, and go through material as slowly as needed to understand it. In the past, students have been confused/crusty/stressed/anxious/angry/salty/cranky when there are two versions of pdf's (pre- and post-lecture) per lecture. It is confusing for us too.
--our class emphasizes the dying art of listening.
--we are often working on powerpoint presentations until right before lecture is scheduled.

Tips for Success in Mammalogy

1) *Be in class, be punctual, and be engaged.* Final grades have been correlated positively with attendance since 2011. The time spent in lab has been correlated positively with lab grades since 2011. Simply attending lecture and lab is necessary but probably insufficient to passing this course, and we expect you to spend at least 3 hours studying outside of class per every credit hour. Be engaged and assertive in both lecture and lab.

2) *Participate in lectures.* We assume that you will have read assigned pages prior to lectures and labs. Questions make understanding easier, and are a requirement for doing science. So, ask them! Also, if something is unclear to you, odds are it is to a classmate as well. When a classmate asks a question, listen both to the question and the answer.

3) *Keep current.* This is especially true for courses in which memorization is a key component (e.g., most of the "ologies"). Students will vary widely in the ease with which they are able to memorize scientific names, and some students should expect to spend more time than others studying these. For this reason, the amount of time you spend studying isn't necessarily correlated with your grade (although it often is).

4) *Learn how you learn.* Students can re-write notes, drill flashcards, draw graphs, make charts, or some combination of these and other study methods. Figure out which approaches work best for you. Again, this is good advice for most courses, but particularly those that combine critical thinking, concepts, and memorization (like this one!).

5) *Study with others and by yourself.* Group work is a good thing, because others can clarify issues with which you're struggling. Working by yourself is also a good thing, because it allows you to focus in depth on what you need to learn (rather than just whatever your group happens to be discussing).

6) *Review notes, powerpoint pdfs, etc quickly (within 48hrs of class) and ask for clarification when needed.* PDFs of powerpoints will be posted on WyoCourses. It is our responsibility to ensure you understand the material; it is your responsibility to let us know when you don't understand something. When we periodically ask "are there any questions?", and there are no questions, we conclude that there are no questions.

7) *Powerpoint pdfs are meant to be a complement to your notes, not a substitute.* Our powerpoint presentations are the basic nuts and bolts of the material we cover. However, there is lots of material that we cover—for which you will be responsible on quizzes—that is not directly on the powerpoint presentations. So, it is important to listen and take notes. It can help to cross-reference notes against slides using the number in the bottom right of the slide.

8) *Turn off electronic devices during class and ignore your phones during class.*

9) *Please be patient with me (Jake) and, more importantly, with your classmates and TA's.* There will always be hiccups. Try to keep this in mind for us; we will for you!